SOUTHWESTERN GEOMETRID NOTES AND NEW SPECIES. I

By John L. Sperry, Riverside, California

The genus *Drepanulatrix* Gump. seems to present more than its fair share of problems to the student of the Geometridae; for example, what is *nevadaria* Hulst? Is it possible that this may be a color form of *carnearia* Hulst?

This would explain the single line of the forewings and if not, how has the species managed to escape capture in an area as well collected as the Sierra Nevada of California? Then we have *ella* Hulst, named from a single specimen, type locality, Washington, no sex given. Barnes and McDunnough in Contributions, III, 3, p. 182 give the sex as female and state that the specimen seems aberrant, the description shows it to be without maculation.

In this genus there is a strong tendency, in most of the species, to produce ochreous female forms and in the species *monicaria* Gn. many of the normal females are immaculate. My friend, Mr. Willliam R. Bauer, of Petaluma, Calif., has in his collection a female *monicaria* taken at Freshwater in Humboldt Co., Calif., 6–21–40, which answers Hulst's description exactly except that the usual extradiscal line of shady triangles shows dimly on the forewing. The specimen seems to be an albinic female and could as well have been immaculate as are some normal females from the same locality. It spreads 29 mm. and if one takes into account Hulst's apparently normal practice of considering the expanse of an insect to be twice the distance from pin to apex of forewing, this specimen would expand 32 mm., which is the distance given in Hulst's description. The author would suggest that there is a very good chance that this hypothesis may well explain *ella*.

Again, does *foeminaria* Gn. equal *pulveraria* Hulst? There are several specimens in the Sperry collection which answer Guénée's description and these we are unable to separate from *pulveraria*. And at long last, has anybody seen *ida* Hulst. We have a specimen or two from Southern California which match the species as it is found in the Cassino & Swett collection in the M.C.Z. but Hulst gives the type locality as Colorado and the possibility of finding a high mountain species near sea level in the southern desert seems remote.

The genus needs revision but it requires someone who can take specimens from the west, the habitat of almost all the species, to the east where the types are deposited and make careful comparisons.

There are at least three undescribed species in the Sperry collection, two of these must await more material or information or both, but the third, thanks to a good series received from our friends, Dr. A. L. Melander and Mr. William R. Bauer, is well represented and the author considers it reasonably safe to describe.

Drepanulatrix baueraria, n. sp.

Male: Head, thorax, abdomen and ground color of forewings pinkish cinnamon (Ridgway color), palpi same, tipped with black. Antennae heavily bipectinate, pectinations longer than in *secundaria* B. & McD., about the same as in *monicaria* Gn. In most specimens of the series three well-defined black lines cross the forewings. The t.a. line, ½ mm. wide, starts at the costa 3/10 out at right angles, curves inward to the cell and goes irregularly straight to inner margin at 1/3; median line from ½, narrower than t.a., curved smoothly subparallel to that line just inside the small black discal dot. T.p. line about the same width as t.a. starts at 2/3 on the costa, curves in more sharply than the other lines to below cell then roughly parallels the median line to inner margin. Halfway between t.p. and apex a shade band starts on the costa and curves sharply inward to below cell approaching the t.p. line to about 1 mm. and parallels it roughly to inner margin. This shade band consists of joined, outward pointing, triangular teeth, three above and from two to four below the cell, sometimes tipped with white scales. There is a terminal row of black dots between the veins. Fringes concolorous with wing. The wing is sparsely strigated with tiny, short, black lines.

Secondaries basally lighter than the primaries but terminally concolorous. There are two lines, t.a. and t.p. which, starting at inner margin, curve slightly for two-thirds the way across the wing and disappear. The continuation of the shade band of the primaries is indicated, there is a small discal dot and a row of terminal dots between the veins. Fringes concolorous.

Beneath, creamy-white sprinkled lightly with dark atoms and shaded apically with cinnamon. Discal dots present on all wings, larger on the secondaries.

There is a tendency to variability in the strength of the maculation but in all specimens in the series the lines are distinguishable.

In the female, although usually distinguishable, the maculation tends to become obsolete and there is usually more orange

in the ground color although some specimens are colored as is the male. Expanse: Male, 23 to 28 mm. Female, 23 to 28 mm.

This species falls next to *monicaria* Gn. and the maculation is between that and *secundaria* B. & McD. It can be distinguished from *monicaria* by its lighter color and heavier maculation, which is weak and indistinct in *monicaria*. It can be separated from *secundaria* by its longer and heavier antennal pectinations and by the secondaries, which in *baueraria* are in part concolorous with the primaries, in *secundaria* light throughout and almost devoid of lines.

The male genitalia offer the best characteristics for separation of these species. In both *monicaria* and *baueraria* the vesica is unarmed, *secundaria* has a small, narrow bundle of short spines well below the center of the organ.

In *monicaria* the aedeagus is short (1½ mm.) and thick and curves to an apex which is thickened into a long bladelike projection. In *baueraria* the aedeagus is thin and longer (2 mm.) and the bladelike projection is wanting, the apex being hardly pointed at all and blunt.

Holotype, male, Big Sur, Calif., June 18, 1947 (A. L. Melander), and in the collection of Grace H. and John L. Sperry.

Allotype, female, Pacific Grove, California, Sept. 27, 1946 (A. L. Melander), and in the Sperry collection.

Paratypes, 13 males, Big Sur and Pacific Grove, Calif. (A. L. Melander), Inverness, Crescent Cr., Petaluma and Orick, Calif. (W. R. Bauer), and Gresham, Ore. (J. Schuh), taken between June 16th and Sept. 29th, 1936 to 1947. 6 females, Pacific Grove, Calif., Sept. 29, 1946 (A. L. Melander), and Crescent Cr., Mohawk, Inverness and Westport, Calif. (W. R. Bauer), June 20 to July 11, 1936 to 1947, and in the U. S. National Museum, Canadian National Museum, Museum of Comparative Zoology, American Museum of Natural History, Los Angeles County Museum, British Museum and collections Bauer and Sperry.

It gives me great pleasure to name this interesting species in honor of my friend, Mr. William R. Bauer of Petaluma, California, whose ability to get the hard ones is uncanny and who in the preparation of specimens for the cabinet is without a peer. May he travel far among the Lepidoptera and may his journeys be always interesting.

During the past several years it has been the indolent practice of the author to allow our common desert Semiothisas to collect in boxes labeled "*colorata* complex" and "*s-signata* and forms" and

at long last the sheer pressure of specimens made it necessary to clear these boxes and separate the species.

Fortunately the male genitalia offer excellent characters for separation and Dr. McDunnough has done such a first-rate job in arranging this genus according to genitalia that it is no trouble to place the unknowns.

Colorata Grote is perhaps our commonest southwestern geometrid and complicates matters by flying throughout the year in the same habitat as *parcata* Grossb. and *sirenata* McD. and even up into *californiaria's* domain.

It has at least four broods, that of the summer being small and very light with females almost immaculate, fall and spring broods are moderate in size and well maculated and the winter brood is large past belief, was confused by Cassino with his *davisata,* as McDunnough has pointed out (1945, Can. Ent., 66) and so has been wrongly placed thereunder in most collections. *Parcata* Grossb. is not such a common species and may be separated by its lighter color, finer maculation and the clear distal dots on all wings. Its unexcavated anal plate with two curved ends and two short tufted octavals separate the species at once.

Sirenata McD. is not so easily separated by the maculation as it is so variable, most of our specimens have a heavy brown suffusion from base to beyond the t.p. line and, contrary to the description, are lighter terminally, others are small with indistinct maculation and no suffusion and a few match the description, but the male genitalia with the fish tail projection of the aedeagus and the lack of gnathos separates the species at once. *Colorata* is represented in the Sperry collection from S. Calif. to S.W. Texas and north to southern Nevada. There is a single male from N. Texas small and bright, with distinct genitalia and further material will probably give us another undescribed species.

S-signata Pack., whose type locality is central Texas, is a gorgeously variable species. Cassino and Swett separated no less than four groups of these, making paratype labels but not describing, in which decision they were probably quite right. It might be possible to separate the Arizona and California *s-signata* from the Texas topotypes on the basis of lighter color and less irrorated wings but the genitalia are identical or nearly so, the only difference that the author can see is a possible narrowing of the gnathos as one goes west. The females are almost always light, sometimes having only the curved t.p. line as maculation. The species which might be confused are *puertata* Grossb. and possibly *minuta* Hulst in very rubbed specimens, both of these have annulate discal dots and

puertata has a very heavy t.a. line which is usually not present at all in *s-signata.*

From the Baboquivari Mts. of southern Arizona, one of our best hot-beds of new species, we have a good series of an *s-signata*-like Semiothisa which is apparently undescribed.

Semiothisa melanderi n. sp.

Palpi, head, thorax and abdomen and ground color of wings light buff (Ridgway color) sparingly irrorated throughout with brown atoms. Antennae heavily short-ciliate; fore tibia unarmed; hind tibia heavily grooved, with hair pencil, hind tarsus short. Forewing maculation deep brown, very similar to *s-signata,* t.a. line heavy (4/10 mm. wide) starts at inner margin $\frac{1}{4}$ out from base, irregular, goes straight to cell at right angles to margin then starts to curve inward and disappears before reaching costa in most specimens, occasionally narrows and reaches costa at 1/3. In most specimens there is indication of a median shade line from a short triangular costal mark, only occasionally present at $\frac{1}{2}$, through the short, upright discal dash and ending on inner margin about 1 mm. from t.a. line, sometimes entirely absent and sometimes indicated only at costa and inner margin. There is a rectangular blotch on costa at 2/3 out from base, above and inside the t.p. line which it does not join. T.p. as in *s-signata,* starts at inner margin $\frac{5}{8}$ out and looks much like an elongated figure 3 with the tips of the number cut off, with the curved side toward the outer margin. It is heavier than the t.a. line, ending at vein 6 and shaded outwardly by a lighter gray-brown shade which continues on to the costa, subterminal area of ground color and a terminal line of black points between the veins. Fringes concolorous, obscurely checkered.

Secondaries lighter than primaries, t.a. line absent, t.p. narrow, starting at right angles to costa at termination of t.p. of primaries, straight to cell, curved slightly inward to vein 2, then straight to inner margin at 1/5 from angle. The line is lighter than those of the primaries and only about 1/5 mm. wide but is always evident. There is a faint shade distad of this line and a slightly darker terminal area, a terminal line of short dashes between the veins. Fringes concolorous, slightly checkered. Small discal dot indicated. Beneath lighter than above, maculation of upper side dimly reflected, discal dot of secondaries stronger than above.

Female: Our single female is light ochraceous salmon (Ridg-

way color). The lines are as in the male but the irrorations are lacking and the shading distad of t.p. line in primaries is barely indicated. Expanse: Male, 20–22 mm. Female, 21 mm.

Holotype, male, Baboquivari Mts., Ariz., 4–25–47 (G. H. & J. L. Sperry) and in the Sperry collection.

Allotype, female, Baboquivari Mts., Ariz., 4–27–38 (G. H. & J. L. Sperry) and in the Sperry collection.

Paratypes, 23 males, same data, Apr. 22–28, 1937, 1938 and 1948; 1 male, Baboquivari Mts., Ariz., 4–26–47 (A. L. Melander).

Paratypes will be deposited in U. S. Nat. Museum, Canadian Nat. Museum, British Museum, M.C.Z., Am. Mus. Nat. Hist. and Los Angeles Museum and in collections Bauer and Sperry.

This species immediately follows *s-signata* Pack. in the list. It is separated from that species by the well marked t.a. line on the primaries and from *puertata* Grossb. by the lighter and more irregular lines and by the dash shaped discal mark which is annular in *puertata*.

It is easily separated from both these species by genitalic characters. The aedeagus in *puertata* is simple, in *s-signata* lightly armed apically and in *melanderi* armed apically by two long spines one on each side of the organ and parallel to the axis thereof, the right spine being somewhat longer than the left. The free costal arm of *puertata* is simple, in *s-signata* there is a paddle-shaped pad extending from the middle of the costa about twice the diameter of the costal arm in length, in *melanderi* this pad is much longer, narrow and finger-shaped, the pad on the sacculus is simple in *s-signata* with a small raised point centrally, that of *melanderi* is long and finger-shaped, unarmed, and curves in toward the ventral surface. The octavals are spinose in *s-signata* and heavily chitinized in a narrow strip the edge of which is smooth, the excavation is open and rather deep. In *puertata* the tips are not spinose and the chitinization inwardly from the edge of the excavation is weak.

In *melanderi* the excavation is much shallower, the tips of the octavals not spinose, the chitinization very heavy, comb shaped with heavy teeth lining the inner edge. This last feature can be seen in situ by moving a few scales on the tip of the abdomen and the spines of *s-signata* are often evident without even that trouble.

It is much like "bringing coals to Newcastle" to name this species in honor of our friend, Dr. A. L. Melander, who needs no introduction to the Entomological World and is no stranger to Entomological honors. Let it be therefore a small token of our

regard and in memory of many fine collecting trips in the southwest and of many fascinating dry washes, with backgrounds of desert or mountain shaded by palo-verde or pines and swarming with diptera by day and geometrids by night. May there be many, many more of these up which we may walk together and where there is always good hunting.

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Brooklyn Entomological Society

Birds Eat Scale Insects.—Scale insects, identified by Dr. Harold Morrison as *Orthezia* sp., were present in the stomachs of the following birds: A long-tailed chickadee, taken 5 miles east of Orr's Ranch, in lower Skull Valley, Tooele County, Utah, September 24, 1942; and in stomachs of sage sparrows, collected north of Kelton, Box Elder County, Utah, September 10, 1942, and at Kelton, Utah, September 30, 1942. A total of 39 coccidae, mostly scale insects, were recognized in an examination of 45 sage sparrow stomachs, collected in rangeland areas of Utah.—G. F. Knowlton, Logan, Utah.